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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/377,667	08/19/1999	HIROMU MUKAI	15162/01020	8179

24367 7590 01/30/2004

SIDLEY AUSTIN BROWN & WOOD LLP
717 NORTH HARWOOD
SUITE 3400
DALLAS, TX 75201

EXAMINER

GENCO, BRIAN C

ART UNIT PAPER NUMBER

2615

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/377,667

Applicant(s)

MUKAI, HIROMU

Examiner

Brian C Genco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: .

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Applicant's provision of a translation of the foreign priority documents has overcome the 35 U.S.C. 103(a) rejection of claims 1-14 by (JP 11-52451 to Funabashi) in view of (USPN 5,654,565 to Hokari). As such, new grounds of rejection are presented bellow.

Applicants arguments with regards to other rejections were fully considered by the Examiner but not deemed persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that in the Koide reference the shape of the sharpened laser beam does not correspond to the shape of the surface.

Examiner notes that when in combination with Sugiyama and Hokari the shape of the stop, or diaphragm, in the horizontal direction coincides with a shape of the light receiving portions of the image sensor.

Applicant argues that it would take a leap of logic which is utterly unsupported by either Koide or Sugiyama that the shape of the laser beam spot should be adapted to match a shape of a sensor element.

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In response, Examiner again reminds applicant that the combination made included the Hokari reference wherein it was taught the extremely well known image sensor structure of having square photosites with microlenses over them.

Applicant argues that hindsight reasoning was used in combining the references.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Further, Examiner notes that the combination of references were combined using teaching from the references themselves. As disclosed by Sugiyama and admitted by Applicant, the photosensitive drum of Koide's invention can be replaced with an image sensor. Examiner notes that Sugiyama does not explicitly disclose the structure of the image sensor to be used. Hokari discloses a well known image sensor structure with square photosites and microlenses. As is general knowledge available to one skilled in the art at the time of the invention, it is advantageous to use microlenses to focus more light onto a pixel and it is advantageous to use square pixels in order to have an easy manufacturing process. Examiner notes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or **in the knowledge generally**

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available to one of ordinary skill in the art (emphasis added). See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). As such, in using the square pixels of Hokari's invention, the diaphragm has a shape in a horizontal direction that coincides with a shape of said light receiving portions of said image sensor, namely they are both linear. In taking this combination of references **as a whole**, using either teaching from the references themselves or knowledge generally available to one of ordinary skill in the art, all of the claimed limitations are met.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the light restricting plate having an oval shape that is circular in a vertical direction and is linear in the horizontal direction must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Examiner notes that the drawings show the opposite as claimed. Examiner further notes that this limitation is supported in the last paragraph on page 9 of the specification however, it is clear to the Examiner that the opposite was intended, namely that it be linear in the vertical direction and circular in the horizontal direction. Examiner further notes that it would appear that the light restricting plate would only have a linear shape in the vertical direction, wherein the combination of the light restricting plate and the circular aperture would produce the shapes shown in Figs. 6 and 7.

Further, the diaphragm having a shape in a horizontal direction that coincides with a shape of said light receiving portions and the diaphragm having an oval shape that is circular in a

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vertical direction and is linear in the horizontal direction must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: Examiner notes that there is an apparent discrepancy in terminology, namely the seeming use of the terms diaphragm and light restricting plate interchangeably. Examiner notes that in the specification the diaphragm seems to be described as a separate structure from the light restricting plate as described on page 6, line 18 – page 7, line 16. Examiner notes that there is a disclosure on page 9, lines 21-25 of the light restricting plate having an oval shape that is circular in the vertical direction and is linear in the horizontal direction. Examiner notes that there is no disclosure of the diaphragm having a shape in the horizontal direction that coincides with a shape of said light receiving portions of said image sensor, in particular having an oval shape that is circular in a vertical direction and is linear in the horizontal direction. To the contrary, the opposite is shown in Fig. 5 and describe in the specification on page 5, line 23 – page 6, line 9. As such, it appears that in the description on page 9 Applicant is using the term light restricting plate as a broad term which encompasses the structure of a diaphragm. Examiner notes the apparent discrepancy between the paragraph on page 9, lines 21-25 and the remainder of the body of the specification as well as the apparent discrepancy between the claims and the drawings. It appears to the

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Examiner that the terms “vertical” and “horizontal” were inadvertently reversed in the specification on page 9, lines 21-25. As such, it also appears that these two terms were also inadvertently switched in the claims. Examiner requests that Applicant clarify of all of these matters in reply to this Office Action.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,510,826 to Koide) in view of (USPN 5,365,307 to Sugiyama) in further view of (USPN 5,654,565 to Hokari).

In regards to claim 1 Koide discloses an image pickup device comprising:
a photosensitive drum;
an image input optical system for forming an image on a sensor, said image input optical system including a diaphragm (e.g., Fig. 2); and
wherein the diaphragm has a shape in a horizontal direction that coincides with a shape of said light receiving portions of said sensor (e.g., element 4 of Fig. 2; Fig. 3).

Koide does not disclose nor preclude an image sensor with rectangular pixels and microlenses integrally formed. Sugiyama discloses that it is known in the art to use a linear image sensor instead of a photosensitive drum in order to photoelectrically read the image information and obtain a copy based on the output of the image sensor (e.g., column 2, lines 58-63). Therefore it would have been obvious to replace Koide’s photosensitive drum with a linear

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image sensor as disclosed by Sugiyama in order to photoelectrically read the image information and obtain a copy based on the output of the image sensor. Hokari discloses a two-dimensional image sensor with rectangular pixels and microlenses (e.g., Figs. 1-9). It is extremely well known and established in the art to use microlenses integrated on a CCD in order to focus more light onto a pixel. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have had rectangular pixels with microlenses integrally attached as taught by Hokari in order to focus more light onto a pixel.

In regards to claim 2 see element 4 of Fig. 2.

In regards to claim 3 see Fig. 1 of the Hokari reference. Note that it is implied to have some sort of charge transferring portion adjoining light receiving portions in any image sensor.

In regards to claims 8-10 see examiners notes on the rejection of claims 1-3.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,654,565 to Hokari) in view of (JP 6-186662 to Shiobara).

In regards to claim 1 Hokari discloses an image pickup device comprising:

an image sensor having rectangular light receiving portions arranged in a matrix, and microlenses disposed in correspondence with said light receiving portions, said light receiving portions and said microlenses being formed integrally with each other (e.g., Figs. 1-9).

Hokari does not disclose an image input optical system including a diaphragm wherein the diaphragm has a shape in a horizontal direction that coincides with a shape of the light receiving portions of the image sensor.

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Shiobara discloses a lens barrel disclosed in Fig. 1 with a diaphragm element 4 of Fig. 1 depicted in Figs. 2-4. Shiobara discloses to use the diaphragm to enable photographing in two or more modes according to the advanced/retracted position of the diaphragm (Abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the lens barrel and diaphragm disclosed by Shiobara in order to focus light onto the image sensor as is known in the art and further in order to enable photographing in two or more modes according to the advanced/retracted position of the diaphragm. Examiner notes that the diaphragm elements 4 depicted in Figs. 2-4 the shape in a horizontal direction coincides with a shape of the light receiving portion of the image sensor.

In regards to claim 2 as depicted in Figs. 2-4 of Shiobara the diaphragm has an oval shape that is circular in a vertical direction and is linear in the horizontal direction.

In regards to claim 3 see Fig. 1 of Hokari.

In regards to claim 4 see Examiners notes on the rejection of claim 1. Examiner is defining the aperture of the camera, element 3 of Fig. 1, to be the diaphragm and the light shielding member depicted in Figs. 2-4 to be the light restricting plate.

In regards to claim 5 Examiner notes that the light restricting plate is disposed on both sides in the horizontal direction and therefore is disposed on one side in the horizontal direction.

In regards to claim 6 see Figs. 2-4.

In regards to claim 7 see Examiners notes on the rejection of claim 3.

In regards to claims 8-10 see Examiners notes on the rejection of claims 1-3.

In regards to claims 11-14 see Examiners notes on the rejection of claims 4-7.

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Examiner requests that clear description be made as to how any amendments to the claims would overcome cited references, in particular GB 2,164,470 to Browning et al. and JP 4-328331 to Shiobara.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian C. Genco who can be reached by phone at 703-305-7881 or by fax at 703-746-8325. The examiner can normally be reached on Monday thru Thursday 7:30am to 4:30 pm and every other Friday 7:30am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is 703-308-4357.

Brian C Genco
Examiner
Art Unit 2615

January 23, 2004



ANDREW CHRISTENSEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600